January 3, 2001

MEMORANDUM

TO: Orville D. Green
Program Administrator
State Air Quality Program

FROM: Gary Gates, Air Quality Analyst
Process Engineering
State Technical Services Office

THROUGH: Daniel Salgado
Lead, Process Engineering
State Technical Services Office

SUBJECT: 9506-082-1, Northwest Pipeline Corporation; Pegram, Idaho
Technical Analysis for Tier I Operating Permit (#007-00004)

PERMITTEE:	Northwest Pipeline Corporation 295 Chipeta Way Salt Lake City, Utah 84108
PERMIT NO:	007-00004
STANDARD INDUSTRIAL CLASSIFICATION (SIC):	4922
DESCRIPTION:	Natural Gas Compressor Station
KIND OF PRODUCTS:	Natural Gas Transmission
RESPONSIBLE OFFICIAL:	Michael Falk; Director, Operations
PERSON TO CONTACT:	Kirt Rhoads; Senior Environmental Specialist
TELEPHONE NO:	(801) 584-6763
# OF FULL-TIME EMPLOYEES:	0
AREA OF OPERATION:	10 acres
FACILITY CLASSIFICATION:	A
COUNTY:	Bear Lake
AIR QUALITY CONTROL REGION:	061
UTM COORDINATES:	487.1, 4633.3
EXACT PLANT LOCATION:	Section 14, T-15-S, R-45-E

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LIST OF ACRONYMS

ACFM	Actual Cubic Feet per Minute
AFS	AIRS Facility Subsystem
AIRS	Aerometric Information Retrieval System
AQCR	Air Quality Control Region
CAA	Clean Air Act
CFR	Code of Federal Regulations
CO	Carbon Monoxide
DEQ	Department of Environmental Quality
dscf	Dry Standard Cubic Feet
EF	Emission Factor
EPA	United States Environmental Protection Agency
ESD	Emergency Shutdown
ft^3/hr	Cubic Feet per Hour
gpm	Gallons per Minute
gr	Grain
HAPs	Hazardous Air Pollutants
hp	Horsepower
IC	Integrated Chip
IDAPA	Idaho Administrative Procedures Act
km	Kilometer
lb/hr	Pound per Hour
MACT	Maximum Achievable Control Technology
μg	Micrograms
μm	Micrometers
MMBtu	Million British Thermal Unit
$MMft^3$	Million Cubic Feet
NESHAP	National Emission Standards for Hazardous Air Pollutants
NWP	Northwest Pipeline Corporation
NO_2	Nitrogen Dioxide
NO_X	Nitrogen Oxides
NSPS	New Source Performance Standards
O_3	Ozone
OAQ	Office of Air Quality
OP	Operating Permit
PM	Particulate Matter
PM_{10}	Particulate Matter with an Aerodynamic Diameter of 10 Micrometer (μm) or Less
ppm	Parts per Million
PSD	Prevention of Significant Deterioration
PTC	Permit to Construct
RMP	Risk Management Plan
SCC	Source Classification Code
scf	Standard Cubic Foot
SIC	Standard Industrial Classification
SIP	State Implementation Plan
SO_2	Sulfur Dioxide
TSP	Total Suspended Particulates
T/yr	Tons per Year (1 Ton = 2000 lb)
VE	Visible Emissions
VOC	Volatile Organic Compound

1. PURPOSE

The purpose of this memorandum is to set out the legal and factual basis for this final Tier I Operating Permit (OP) in accordance with IDAPA 58.01.01.362, *Rules for the Control of Air Pollution in Idaho (Rules).*

The Idaho Department of Environmental Quality (DEQ) staff has reviewed the information provided by Northwest Pipeline Corporation (NWP) regarding the operation of their facility in Pegram, Idaho. This information was submitted based on the requirements of the Tier I OP in accordance with Section 58.01.01.300 of the *Rules.*

Based on the information submitted, DEQ has drafted a Tier I OP for NWP. The permit was submitted for public comment and the comments received have been addressed. This proposed permit was also forwarded to the United States Environmental Protection Agency (EPA) for their review in accordance with IDAPA 58.01.01.366.

2. SUMMARY OF EVENTS

On June 22, 1995, DEQ received the Tier I OP application from NWP for their Pegram Compressor Station. The application was prepared by Foster Wheeler Environmental Corporation, the facility's consulting firm. The application was determined to be administratively complete on August 14, 1995. The draft Tier I Operating Permit and technical memorandum underwent public comment from September 22, 1999, to October 22, 1999. The permit was submitted to EPA for their 45-day review from October 11, 2000, to November 24, 2000. EPA had no objections with regard to the terms and conditions of the permit.

3. BASIS OF THE ANALYSIS

The following documents were relied upon in preparing this memorandum and the Tier I OP:

a. Tier I Air Operating Permit Application, (June 22, 1995, Northwest Pipeline Corporation; Salt Lake City, Utah; prepared by Foster Wheeler Environmental Corporation);

b. Compilation of Air Pollutant Emission Factors, AP-42, Fifth Edition, January 1995, Office of Air Quality Planning and Standards, United States Environmental Protection Agency;

c. 40 CFR Part 70;

d. Guidance developed by EPA and DEQ;

e. Title V permits issued by other jurisdictions;

f. Documents and procedures developed in the Title V Pilot Operating Permit program; and

g. EPA, Region 10 comments on Draft Air Operating Permit,
Northwest Corporation comments on Draft Tier I Operating Permit, October 22, 1999,
Krista McIntyre comments on Northwest Pipeline Operating Permits, October 21, 1999.

4. REGULATORY ANALYSIS - GENERAL FACILITY

4.1 Facility Description

4.1.1 General Process Description

The Pegram Compressor Station operates remotely from NWP's headquarters, located in Salt Lake City, and is used to transmit natural gas along NWP's natural gas transmission pipeline. The station is

operated to meet the demand of the pipeline system rather than a fixed schedule. The arrangement of pipes and valves in the Pegram pipe yard allows natural gas to be transmitted in either direction.

Natural gas entering the station passes through two in-line filters (one for each turbine) that remove any impurities from the gas stream. The natural gas is compressed through the compressor and is returned to the transmission pipeline. Fuel for the turbine and other natural gas combustion equipment enters the station in a separate pipeline that originates in the pipe yard. Fuel gas is lowered from the pipeline pressures to pressures appropriate for the turbines in the fuel gas building. From the fuel gas building, natural gas is transported to the turbines, the fuel gas heater, the space heaters, and the oil compressor. The turbines, fuel gas heater, and backup air compressor have their own exhaust stacks.

Lubricating oil is stored in two makeup tanks (one for each turbine) from which it flows by gravity on demand to crankcase tanks under each of the turbines. When the turbine is running, lubricating oil circulates through the turbine and is pumped to a fan-assisted oil cooler located outside the turbine building.

There is no glycol dehydration unit at this facility. The facility is not subject to the Natural Gas Transmission MACT in 40 CFR Part 63 Subpart HH.

The emissions from the Pegram Compressor Station are largely the result of natural gas combustion. In addition, there are small amounts of emissions from various other sources. Appendix A provides detailed emission estimates from the facility. The principal pollutant of concern is NO_x.

The hazardous air pollutants (HAPs) emanating from the facility are mostly from the turbines in the form of organic and inorganic compounds. The emissions are listed in Appendix A. Total HAPs are well below one ton per year, so the facility is not a major source of HAPs.

4.1.2 Facility Classification

The facility is a natural gas compressor station, SIC 4922.

4.1.3 Area Classification

The facility is located just outside of Pegram, Idaho, which is classified as attainment or unclassifiable for all federal and state criteria pollutants (i.e., SO_2, NO_x, CO, PM_{10}, ozone, fluorides, and lead). Northwest Pipeline's Pegram Facility is located in AQCR 61 and UTM Zone 12.

4.1.4 Permitting History

Northwest Pipeline Corporation was issued a Permit to Construct (PTC # 007-00004) for the Pegram compressor station on June 17, 1991.

The permit was amended on April 21, 1994; December 9, 1994; May 1, 1995; and December 8, 1995.

4.2 Facility-Wide Applicable Requirements

4.2.1 Fugitive Particulate Matter - IDAPA 58.01.01.650-651

4.2.1.(a) Requirement

Facility-wide Condition A.1 states that, all reasonable precautions shall be taken to prevent particulate matter from becoming airborne in accordance with IDAPA 58.01.01.650-651.

4.2.1.(b) Compliance Demonstration

Facility-wide Condition A.2 states that the permittee is required to monitor and record the frequency and the methods used by the facility to reasonably control fugitive particulate emissions. IDAPA 58.01.01.651 gives some examples of ways to reasonably control fugitive emissions which include, use of water or chemicals, application of dust suppressants, use of control equipment, covering of trucks, paving of roads or parking areas, and removal of materials from streets.

Facility-wide Condition A.3 requires that the permittee maintain records of all fugitive dust complaints received. In addition, the permittee is required to take appropriate corrective action as expeditiously as practicable after a valid complaint is received. The permittee is also required to maintain records which shall include the date that each complaint was received and a description of the complaint, the permittee's assessment of the validity of the complaint, any corrective action taken, and the date the corrective action was taken.

To ensure that the methods being used by the permittee to reasonably control fugitive particulate matter emissions, whether or not a complaint is received, Facility-wide Condition A.4 requires that the permittee conduct quarterly inspections of the facility. The facility has minimal vehicle traffic and only one road into the facility; therefore, quarterly inspections will be sufficient. The permittee is required to inspect potential sources of fugitive emissions during daylight hours and under normal operating conditions. If the permittee determines that the fugitive emissions are not being reasonably controlled the permittee shall take corrective action as expeditiously as practicable. The permittee is also required to maintain records of the results of each fugitive emission inspection.

Both Facility-wide Conditions A.3 and A.4 require the permittee to take corrective action as expeditiously as practicable. In general, the Department believes that taking corrective action within twenty-four hours of receiving a valid complaint or determining that fugitive particulate emissions are not being reasonably controlled meets the intent of this requirement. However, it is understood that, depending on the circumstances, immediate action or a longer time period may be necessary.

4.2.2 Control of Odors - IDAPA 58.01.01.775-776

4.2.2.(a) Requirement

Facility-wide Condition A.5 and IDAPA 58.01.01.776 both state that: *"No person shall allow, suffer, cause, or permit the emission of odorous gases, liquids, or solids to the atmosphere in such quantities as to cause air pollution."* This condition is currently considered federally enforceable until such time it is removed from the SIP, at which time it will be a state-only enforceable requirement.

4.2.2.(b) Compliance Demonstration

Facility-wide Condition A.6 requires the permittee to maintain records of all odor complaints received. If the complaint has merit, the permittee is required to take appropriate corrective action as expeditiously as practicable. The record is required to contain the date that each complaint was received and a description of the complaint, the permittee's assessment of the validity of the complaint, any corrective action taken, and the date the corrective action was taken.

Facility-wide Condition A.6 requires the permittee to take corrective action as expeditiously as practicable. In general, the Department believes that taking corrective action within twenty-four hours of receiving a valid odor complaint meets the intent of this requirement. However, it is understood that, depending on the circumstances, immediate action or a longer time period may be necessary.

4.2.3 Visible Emissions - IDAPA 58.01.01.625

4.2.3.(a) Requirement

IDAPA 58.01.01.625 and Facility-wide Condition A.7 state that *"(No) person shall discharge any air pollutant to the atmosphere from any point of emission for a period or periods aggregating more than three (3) minutes in any sixty (60) minute period which is greater than twenty percent (20%) opacity as determined . . ."* by IDAPA 58.01.01.625. This provision does not apply when the presence of uncombined water, nitrogen oxides, and/or chlorine gas are the only reason(s) for the failure of the emission to comply with the requirements of this rule.

4.2.3.(b) Compliance Demonstration

To ensure reasonable compliance with the visible emission rule, Facility-wide Condition A.8 requires that the permittee conduct quarterly visible emissions inspections of the facility. The facility uses exclusively natural gas with no visible emissions expected; therefore, quarterly monitoring is sufficient. The permittee is required to inspect potential sources of visible emissions, during daylight hours and under normal operating conditions. If any visible emissions are present from any point of emission covered by this section, the permittee must take appropriate corrective action as expeditiously as practicable. If opacity is determined to be greater than twenty percent (20%) for a period or periods aggregating more than three (3) minutes in any sixty (60) minute period, the permittee must take corrective action and report the exceedance in its annual compliance certification and in accordance with the excess emissions rules in IDAPA 58.01.01.130-136. The permittee is also required to maintain records of the results of each visible emissions inspection which must include the date of each inspection and a description of the permittee's assessment of the conditions existing at the time visible emissions are present, any corrective action taken in response to the visible emissions, and the date corrective action was taken.

It should be noted that if a specific emission unit has a specific compliance demonstration method for visible emissions that differs from Facility-wide Condition A.8, then the specific compliance demonstration method overrides the requirement of Condition A.8. Condition A.8 is intended for small sources that would generally not have any visible emissions.

Facility-wide Condition A.8 requires the permittee to take corrective action as expeditiously as practicable. In general, the Department believes that taking corrective action within twenty-four hours of discovering visible emissions meets the intent of this requirement. However, it is understood that, depending on the circumstances, immediate action or a longer time period may be necessary.

4.2.4 Startup, Shutdown, Scheduled Maintenance, Safety Measures, Upset and Breakdown- IDAPA 58.01.01.130-136

4.2.4.(a) Requirement

Facility-wide Condition A.9 requires that the permittee comply with the requirements of IDAPA 58.01.01.130-136 for startup, shutdown, scheduled maintenance, safety measures, and upset and breakdowns. This section is fairly self explanatory and no additional detail is necessary in this technical analysis. It should, however, be noted that IDAPA 58.01.01.133.02, 133.03, 134.04, and 134.05 are not specifically included in the permit as applicable requirements. These provisions of the *Rules* only apply if the permittee anticipates requesting consideration under IDAPA 58.01.01.131.02 of the *Rules* to allow the Department to determine if an enforcement action to impose penalties is warranted. IDAPA 58.01.01.131.01 states *". . . The owner or operator of a facility or emissions unit generating excess emissions shall comply with Sections 131, 132, 133.01, 134.01, 134.02, 134.03, 135, and 136, as applicable. If the owner or operator anticipates requesting consideration under Subsection 131.02, then the owner or operator shall also comply*

with the applicable provisions of Subsections 133.02, 133.03, 134.04, and 134.05." Failure to prepare or file procedures pursuant to IDAPA 58.01.01.133.02 and 134.04 is not a violation of the *Rules* in and of itself, as stated in IDAPA 58.01.01.133.03.a and 134.06.b. Therefore, since the permittee has the option to follow the procedures in IDAPA 58.01.01.133.02, 133.03, 134.04, and 134.05; and is not compelled to, the subsections are not considered applicable requirements for the purpose of this permit and are not included as such.

4.2.4.(b) Compliance Demonstration

The compliance demonstration is contained within the text of Facility-wide Condition A.9. No further clarification is necessary here.

4.2.5 Reporting

4.2.5.(a) Requirement

The permittee is required to submit periodic reports and certifications to the Department at the required times to the appropriate agency as described in Facility-wide Condition A.10.

Sufficient reporting to assure compliance with all of the terms and conditions of the permit. Reports for any required monitoring shall be submitted at least every six (6) months in accordance with IDAPA 58.01.01.322.08.

In accordance with IDAPA 58.01.01.322.08, NWP must report all instances of deviations from permit requirements. Therefore, even if specific monitoring is not required by the permit, the permittee must report any deviations of which he/she is aware.

4.2.5.(b) Compliance Demonstration

The compliance demonstration is contained within the text of Facility-wide Condition A.10. No further clarification is necessary here.

4.2.6 Recordkeeping

4.2.6.(a) The permittee is required to maintain sufficient recordkeeping to assure compliance with all of the terms and conditions of the permit as required by IDAPA 58.01.01.322.a and b. In addition, the permittee shall retain records of all monitoring and other requirements in the Tier I OP for the most recent five (5) year period. These records shall be made available to DEQ representatives upon request.

4.2.6.(b) Compliance Demonstration

The compliance demonstration is contained within the text of facility-wide conditions. No further clarification is necessary here.

4.2.7 Chemical Accident Prevention Provisions - 40 CFR Part 68

4.2.7.(a) Requirement

Any facility that has more than a threshold quantity of a regulated substance in a process, as determined under 40 CFR 68.115 must comply with the requirements of the Chemical Accident Prevention Provisions at 40 CFR Part 68 no later than the latest of the following dates:

Three years after the date on which a regulated substance present above a threshold quantity is first listed under 40 CFR 68.130; or

The date on which a regulated substance is first present above a threshold quantity in a process.

This facility is not currently subject to the requirements of 40 CFR Part 68. However, should the facility ever become subject to the requirements of 40 CFR Part 68 then it must comply with the provisions contained in 40 CFR Part 68 by the time listed above.

4.2.7.(b) Compliance Demonstration

The compliance demonstration is contained within the text of facility-wide conditions. No further clarification is necessary here.

4.2.8 Testing

4.2.8.(a) Requirement

Testing is required in the permit, and all testing must meet the requirements as set forth in the Facility-wide Condition A.15. The required testing then must also meet the notification requirements as stated in Facility-wide Condition A.16. NWP has requested that 45 days be allowed for submitting test reports. IDAPA 58.01.01.157 does allow for a permit to specify a time allowed for report submission. NWP contracts one testing company to do all of their testing at one time. Extra time is then needed after performing all testing to draft and submit all of the test reports.

4.2.8.(b) Compliance Demonstration

The compliance demonstration is contained within the text of facility-wide conditions. No further clarification is necessary here.

4.2.9 NSPS Subpart A Applicability

4.2.9.(a) Requirement

This facility is subject to 40 CFR 60 Subpart GG (NSPS) for its gas turbines; therefore, the facility must also comply with applicable sections of Subpart A (NSPS General Provisions). After reviewing the General Provisions, it was determined that the following IDAPA sections apply to this facility:

58.01.01.60.4	Address;
58.01.01.60.7{(a)(4) &(b)}	Notification and Recordkeeping;
58.01.01.60.8(b)(c)(d)(e)(f)	Performance Tests;
58.01.01.60.11(c)(d)(g)	Standards and Maintenance;
58.01.01.60.12	Circumvention;
58.01.01.60.14	Modification; and
58.01.01.60.15	Reconstruction.

4.2.9.(b) Compliance Demonstration

Most of these requirements are to show compliance. Each requirement is taken directly out of Subpart A and is included as text in the facility-wide conditions. No further clarification is necessary here.

4.2.9.(c) Non-Applicable Requirements

Sections 60.1, 2, 3, 5, 6, 9, 10, 16, and 17 do not need to be included in the Title V permit, as they are generally only for informational purposes. However, the applicability of the remaining Sections to this facility had to be determined.

60.7(a)(1-3, 6) does not apply to this facility because they deal with notification of initial startup of a facility. The turbines at this facility have been operating, so therefore the initial notification no longer applies.

60.7(a)(7) does not apply to this facility because this facility does not utilize a continuous opacity monitoring system.

60.7(c), (d), (e), and (f) do not apply to this facility because this facility does not utilize a continuous monitoring system. All of these requirements pertain to facilities that have continuous monitoring systems of any kind.

60.7(g) and (h) are simply informational sections and were not included in the Title V permit.

60.8(a) does not apply because the NSPS affected turbines have been operating. The initial performance test period has already passed.

60.11(e) does not apply because it refers to the initial compliance test. As stated previously the initial testing period has already passed.

60.18 does not apply as this facility does not have any control devices as described in the section (i.e., flare).

4.3 Alternative Operating Scenarios

The permittee may install, maintain, and operate one or more replacement turbines (or turbine parts) at this facility. Emissions, throughput, and horsepower shall be consistent with existing units. Replacement turbines shall undergo an initial performance test to measure oxides of nitrogen and sulfur dioxide emissions in accordance with the test measures and procedures in 40 CFR 60.8 and 60.335.

The permittee shall notify DEQ of each turbine replacement at least 30 days before the change out, or in emergency situations where the permittee does not know 30 days in advance, within two days of determining that a change out is required. The notification shall include a statement as to whether the unit being installed has been or will be reconstructed, as defined in 40 CFR 60.15.

4.4 Trading Scenarios

There were no trading scenarios requested by the facility.

4.5 Excess Emissions

NWP did not submit procedures to minimize excess emissions for possible excuses from penalties.

5. REGULATORY ANALYSIS - EMISSIONS UNITS

5.1 Solar Turbines

5.1.1 Emission Unit Description

The natural gas compressors are powered by Solar Turbines, Inc., Centaur turbines. The turbines are sources of PM_{10}, SO_2, CO, NO_x, VOCs, and some HAPs. The Unit 1 and 2 compressors are powered by Solar Centuar T-4700 and T-4500 natural gas turbines respectively. The T-4700 turbine was installed during 1979 as a T-4000 and was upgraded to a T-4500 on September 28, 1994 and then later downsized to a T-4700 on October 31, 1995. The T-4500 turbine was installed during 1992. A T-4700 turbine provides a maximum capacity of 3,875 hp at station average conditions, while the T-4500 turbine provides a maximum capacity of 3,050 hp. Both turbines operate entirely on natural gas from the pipeline. At full load, the T-4500 produces about 117,790 pounds per hour (lbs/hr) of exhaust flow, while the T-4700 produces about 123,025 lbs/hr. The rated heat input of each turbine is approximately thirty-eight (38) MMBtu/hr.

The stack parameters for the T-4500 turbines are as follows:

Stack Height:	51 feet 8 inches
Stack Diameter:	4.0 feet
Stack Flow Rate:	76,330 ACFM
Stack Temperature:	759°F (average)

The stack parameters for the T-4700 turbines are as follows:

Stack Height:	52 feet
Stack Diameter:	4.0 feet
Stack Flow Rate:	81,786 ACFM
Stack Temperature:	840°F (average)

5.1.2 Permit Requirement - VISIBLE EMISSIONS - [IDAPA 58.01.01.625]

5.1.2.(a) Applicability

The Solar Centaur T-4500 and T-4700 natural gas turbines are affected by IDAPA 58.01.01.625 and 675.

5.1.2.(b) Compliance Demonstration Method

Compliance with these standards shall be demonstrated by using only natural gas in the turbines. Since combustion of natural gas results in very little particulate matter emissions, DEQ staff does not foresee that normal operations of natural gas combustion will cause a violation of the twenty percent (20%) opacity standard or the grain-loading standard. Section 8.4.1 of the permit application shows maximum grain loading while firing natural gas is 0.00589 gr/dscf, which is far below the 0.015 gr/dscf requirement. Also, Section 8.4 of the permit application affirms that the plume opacity from the turbines is less than two percent while burning natural gas.

In accordance with IDAPA 58.01.01.322.06, DEQ has established that only natural gas shall be fired in the turbines to assure compliance with IDAPA 58.01.01.625 and 675.

5.1.2.(c) Monitoring

As combustion of natural gas results in minimal particulate matter emissions, the only monitoring required by the permittee is fuel usage, as long as only natural gas is fired in the turbines.

5.1.2.(d) Testing

The permittee is not required to perform a visible emission observation as long as only natural gas is burned in the turbines.

5.1.2.(e) Recordkeeping

No recordkeeping other than fuel usage is necessary for this requirement.

5.1.2.(f) Reporting

Pursuant to IDAPA 58.01.01.322.08.b, the permittee is required to submit a report every six (6) months that includes all instances of deviations from the requirements of this permit. The permittee shall submit the initial report six (6) months after issuance of the permit and submit subsequent reports every six (6) months thereafter.

5.1.3 Permit Requirement - FUEL BURNING EQUIPMENT - [IDAPA 58.01.01.675]

5.1.3.(a) Applicability

The Solar Centaur T-4500 and T-4700 natural gas turbines are affected by IDAPA 58.01.01.675.

5.1.3.(b) Compliance Demonstration Method

Compliance with this standard shall be demonstrated by using the same methods as those stated in 5.1.2.(b) of this memorandum.

5.1.3.(c) Monitoring

Monitoring shall be performed as stated in 5.1.2.(c) of this memorandum.

5.1.3.(d) Testing

Testing shall be performed as stated in 5.1.2.(d) of this memorandum.

5.1.3.(e) Recordkeeping

Recordkeeping shall be performed as stated in 5.1.2.(e) of this memorandum.

5.1.3.(f) Reporting

Pursuant to IDAPA 58.01.01.322.08.b, the permittee is required to submit a report every six (6) months that includes all instances of deviations from the requirements of this permit. The permittee shall submit the initial report six (6) months after issuance of the permit and submit subsequent reports every six (6) months thereafter.

5.1.4 Permit Requirement - [40 CFR 60.332(c) and 60.332(a)(2)]

5.1.4.(a) Applicability

The T-4500 and T-4700 natural gas turbines are affected by 40 CFR 60.332(c) and 60.332(a)(2), which limit nitrogen oxides (NO_X) emissions to 0.016 percent by volume. The 0.016 percent number comes from the equation in 40 CFR 60.332(a)(2):

$$STD = 0.0150 * (14.4)/Y) + F$$

Where: STD = Allowable NO_X emissions (percent by volume at 15 percent oxygen on a dry basis).

Y = Heat rate at manufacturer's rated peak load, in kilojoules per watt hour, not greater than 14.4 kilojoules per watt hour (Kj/w.hr).

F = NO_X emission allowance for fuel burned nitrogen.

For the T-4500 and T-4700 Turbines, Y = 13.2 KJ/w.hr and F = 0. Thus:

$$STD = 0.0150 * (14.4)/13.2 + 0 = 0.016$$

5.1.4.(b) Compliance Demonstration Method

To ensure compliance with this standard, the permittee shall record the fuel usage on a monthly basis and, at least once per month, shall calculate and record the highest percent by volume NO_X emissions.

5.1.4.(c) Monitoring

The permittee shall monitor the fuel usage on a monthly basis. At least once per month, the permittee shall calculate and record the highest percent by volume NO_X emissions.

5.1.4.(d) Testing

The T-4500 turbine was tested in accordance with 40 CFR 60.8 and 40 CFR 60.335 on March 30 and 31, 2000. The T-4700 turbine was tested in accordance with 40 CFR 60.8 and 40 CFR 60.335 on March 30 and 31, 2000. The tests showed the turbines to be within regulatory limits.

The permittee shall conduct an annual performance test within one (1) year after the issuance date of the permit to measure NO_X emissions from each of the turbine exhaust stacks. The tests shall be performed while the turbines are operating at the maximum achievable full-load conditions. If the results from two (2) consecutive tests show NO_X emissions from both turbines are less than seventy-five percent (75%) of the lb/hr emission limit in Condition B.3 and C.3 of the permit and the NO_X percent by volume limit in Condition B.2 and C.2 of the permit, then no further testing of the turbines for that pollutant is required during the rest of the permit term.

The permittee scheduled and conducted a performance test in March of 2000. They believed that the OP would already have been issued and they would be performing the first annual performance test as required. However, with the permitting delay, the tests were done prior to the OP being issued. Northwest Pipeline will be allowed to use the March 2000 tests as their first annual performance test as required in the permit.

Emission testing methods shall be in accordance with the test methods and procedures in 40 CFR 60.335, IDAPA 58.01.01.157, and Condition A.15 of the permit. The turbine conditions to be monitored and recorded include, but are not limited to, the gas producer speed (percent), the airflow, and the sample length. The method for determining all these parameters shall be reported with the emission test data.

Replacement of turbines is a routine activity. The turbines are scheduled to be replaced after approximately 30,000 hours of operation. Turbine failures can also occur unexpectedly, where immediate replacement may be required to maintain natural gas flow to downstream customers. For these reasons, it is necessary to allow for turbine replacement in the OP for this facility. The facility is under other constraints such as pipeline pressures, volumes, etc.; therefore, replacement of a turbine with a like model is necessary. If a larger model is planned to be installed, it will need to go through the Permit to Construct process.

If a replacement turbine is installed, the permittee shall conduct an initial performance test to measure NO_x emissions in accordance with the test methods and procedures in 40 CFR 60.8 and 60.335 and Condition A.15 of the permit. Emissions, throughput, and horsepower of replacement turbines shall not exceed emission limits, throughput limits, and horsepower of the existing units.

5.1.4.(e) Recordkeeping

The permittee shall maintain records of the monthly fuel usage and all calculations for a period of five (5) years. These records shall be made available to DEQ representatives upon request.

5.1.4.(f) Reporting

Pursuant to IDAPA 58.01.01.322.08.b, the permittee is required to submit a report every six (6) months that includes all instances of deviations from the requirements of this permit. The permittee shall submit the initial report six (6) months after issuance of the permit and submit subsequent reports every six (6) months thereafter.

5.1.5 Permit Requirement - [40 CFR 60.333(b)]

5.1.5.(a) Applicability

The T-4500 and T-4700 natural gas turbines are affected by 40 CFR 60.333(b), which disallows any fuel containing sulfur in excess of 0.8 percent by weight to be burned in the turbines.

5.1.5.(b) Compliance Demonstration Method

To ensure compliance with this standard, the permittee shall monitor sulfur content of the fuel being burned in the turbines in accordance with the January 19, 1999, custom fuel compliance monitoring schedule approved by EPA, Region 10. In accordance with this same agreement, fuel nitrogen content monitoring will be waived.

5.1.5.(c) Monitoring

The permittee shall monitor the fuel sulfur content in accordance with the January 19, 1999, custom fuel compliance monitoring schedule approved by EPA, Region 10.

5.1.5.(d) Testing

No testing is required to demonstrate compliance with this requirement, except any noted in the January 19, 1999, custom fuel compliance monitoring schedule mentioned above.

5.1.5.(e) Recordkeeping

The permittee shall maintain all records for a period of five (5) years. These records shall be made available to DEQ representatives upon request.

5.1.5.(f) Reporting

Pursuant to IDAPA 58.01.01.322.08.b, the permittee is required to submit a report every six (6) months that includes all instances of deviations from the requirements of this permit. The permittee shall submit the initial report six (6) months after issuance of the permit and submit subsequent reports every six (6) months thereafter.

5.1.6 Turbine Replacement

A turbine is a component of an entire compressor unit. The turbines within the compressor units are routinely scheduled for maintenance based on the hours of service. The replacement of a turbine does not increase the efficiency of a compressor unit, does not increase the capacity of a compressor unit, nor does it substantially extend the plant's useful life. Turbine replacement does occur on a routine basis.

To meet the guidelines of the routine maintenance, repair, and replacement exclusion, the routineness of the activity needs to be determined. Routineness is based on five criteria: nature, extent, purpose, frequency, and cost.

The nature is satisfied because turbine replacement is replacement of only a component of the emission unit (compressor) with a part that has the same size, function, and importance to the operation of the facility. Any change that would increase the capacity of the compressor unit would have to be approved by governing bodies of the natural gas pipeline. The turbines are specifically designed to be easily changed out (skid mounted).

The extent of replacement again is just a portion of the entire emission unit. The skid-mounted replacement turbines do not require long periods to change out. There are no parts that are added to existing equipment, rather it is just an entire replacement of the existing turbine.

The purpose of replacement is not to extend the useful life of the entire emission unit, rather it is to maintain the emission unit in good working order. In most cases, not replacing the turbines on a timely basis could produce poor combustion and, thus, create higher emissions, additional fuel usage, and smaller output.

The frequency of replacement is based on hours of operation of the turbines. Once the turbines reach a specified service time, they are replaced. The frequency is such to try to avoid failures, malfunctions, and improper operation of the turbines.

The cost of routinely changing out the turbines with turbines that have been maintained and repaired is not large relative to replacement with a new turbine. The replaced turbine is taken and repaired such that the repaired turbine can be used to replace a like kind turbine that may need replacement elsewhere.

The routine replacement of the turbines by NWP does meet the five criteria set forth. The replacement turbines; therefore, are considered to meet the requirements of the routine maintenance, repair, and replacement exclusion.

6. INSIGNIFICANT ACTIVITIES

There are several sources listed as insignificant at the Pegram Compressor Station (see application at Section 2.9). These emission units qualify as insignificant due to the quantity of emissions or to the fact the source itself is specifically listed in IDAPA 58.01.01.317.01.a. and/or b. Emission units that are listed as insignificant under IDAPA 58.01.01.317.01.b. are listed in the Tier I OP in order to be encompassed by the permit shield. Emission units that were determined insignificant under IDAPA 58.01.01.317.01.a. are not listed in the Tier I OP. While there are no monitoring requirements for insignificant emissions units at this facility, these units must comply with all applicable federal, state, and local requirements.

6.1 Fuel Gas Heater

The 250,000 Btu/hour fuel gas heater is located in the pipe yard and exhausts to its own 10-foot stack. Operating entirely on natural gas, the fuel gas heater is the source of small quantities of PM_{10}, SO_2, CO, NO_x, VOCs, and some HAPs. Emissions from the fuel gas heater are considered insignificant in accordance with IDAPA 58.01.01.317.b.i.5.

6.2 Backup Air Compressor

In the event that electric power to the facility is interrupted, electricity would be generated by a natural gas powered backup air compressor. About once a month, the generator is automatically tested for about half an hour.

The backup air compressor is driven by a 15-hp engine manufactured by Wisconsin Motors (Model TJD). The engine exhausts to its own stack, which is a 4-inch pipe that penetrates the auxiliary building directly above the compressor. The backup air compressor burns about 283 ft^3/hour and is the source of small quantities of PM_{10}, SO_2, CO, NO_x, VOCs, and some HAPs. Emissions from the backup air compressor are considered insignificant in accordance with IDAPA 58.01.01.317.b.i.5.

6.3 Space Heaters

Space heaters at the Pegram station are used to heat the buildings and to prevent methane ice from forming in the fuel lines. Space heaters are located in the compressor building, auxiliary building, fuel meter building, and valve skids. The heaters are powered by natural gas.

The space heaters have a combined heat rate of approximately 1.3 MMBtu/hour, and if they were operated simultaneously, would burn about 1,384 ft^3/hour of natural gas. The space heaters are sources of small quantities of PM_{10}, SO_2, CO, NO_x, VOCs, and some HAPs. Emissions from the space heaters are considered insignificant in accordance with IDAPA 58.01.01.317.b.i.5.

6.4 Lubricating Oil System

The lubricating oil system for the turbine compressors consists of two 500-gallon make-up oil tanks, the circulation system, a used oil collection system, and a used oil tank.

The lubricating oil system is a source of a small amount of VOC emissions. Emissions from the lubricating system are considered insignificant in accordance with IDAPA 58.01.01.317.a.i.4.

6.5 Natural Gas Pipeline and Fuel System

Natural gas contains some non-methane hydrocarbons. Both methane (methane and ethane) and VOCs would be emitted to the atmosphere from leaking valves, flanges, and pressure relief valves. The flanges, valves, and pressure relief valves that comprise the natural gas conveyance system in the pipe yard, as well as the fuel gas system, are sources of methane/ethane and VOC fugitive emissions.

Annually, the Emergency Shutdown (ESD) system at the Pegram station is tested. The ESD system is designed to shut down the station and vent all of the natural gas in the pipes in the event of an emergency. Maintenance performed on pipes that transmit natural gas require that material in the pipes first be vented. The vented natural gas, or blowdown, is another source of methane and VOC emissions.

Natural gas is vented to the atmosphere during the turbine startup and shutdown procedure. Natural gas at pipeline pressure is used to spin up the turbines and is then vented to the atmosphere. When a turbine is shut down, the natural gas in the compressor and the length of pipe between the bypass valves (located in the valve skid) and the compressor is vented to the atmosphere (referred to as blowdown).

The piping used to convey natural gas to and from the compressors includes valves, flanges, compressor seals, and pressure relief valves. A separate system brings fuel gas to the turbines and other natural gas combustion equipment. Emissions are based on EPA emission factors for compressor seals, in-line valves, pressure relief valves, and flanges, and the number of each of these items in the system. Emissions from the natural gas pipeline and fuel system are considered insignificant in accordance with IDAPA 58.01.01.317.b.i.30.

6.6 Fugitive Sources

The emission factors from EPA's AP-42, Fifth Edition (1995), Section 13.2.2 were used to determine the PM_{10} emissions from vehicles operated on gravel roads at the site. Emissions from fugitive sources are considered insignificant in accordance with IDAPA 58.01.01.317.b.i.30.

7. COMPLIANCE PLAN AND COMPLIANCE CERTIFICATION

7.1 Compliance Plan

NWP shall submit a compliance plan indicating each emissions unit is in compliance, and will continue to comply, with the terms and conditions of IDAPA 58.01.01.314.10. In addition, if there are additional terms or conditions applicable to the source, NWP will meet the terms and conditions on a timely basis as required by DEQ. Furthermore, NWP will submit a compliance schedule if the emissions unit is not in compliance.

7.2 Compliance Certification

NWP shall submit a periodic compliance certification for each emissions unit in the form of annual report to DEQ and EPA within thirty (30) days after the end of each calendar year. The permittee must certify compliance with all terms and conditions on the permit including, but not limited to, the sulfur and nitrogen content of the fuel, fuel usage and emissions calculations, visible emission standard, and fugitive emissions in accordance with IDAPA 58.01.01.322.11.

7.3 Compliance Inspection

The facility may be inspected at least annually by DEQ. Copies of the annual inspection reports are located in the source file at DEQ's office in Boise, Idaho.

8. AIRS DATABASE

There are no new emissions source associated with this permit. All units have been registered into the AIRS database.

AIRS Point No. 010 SCC # 20300202	Natural Gas Turbine
AIRS Point No. 020 SCC # 20300202	Natural Gas Turbine

9. REGISTRATION FEES

IDAPA 58.01.01.525 applies to this facility. Northwest Pipeline Corporation shall determine annual emissions in a manner consistent with IDAPA 58.01.01.525 for the purposes of registration fees.

10. RECOMMENDATION

Based on the Tier I OP application and review of the federal regulations and state rules, staff recommends that DEQ provide a Tier I OP for Northwest Pipeline Corporation's Pegram Compressor Station located in Pegram, Idaho.

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Attachments

cc: Pocatello Regional Office
DEQ State Office
L. Kral, EPA, Region X

APPENDIX A

NORTHWEST PIPELINE CORPORATION

PEGRAM COMPRESSOR STATION

POINT SOURCE HOURLY (lb/hr) AND ANNUAL (T/yr) EMISSION ESTIMATES[a]

Source	NO_x			SO_2	
	(lb/hr)	(T/yr)	(ppm)	(lb/hr)	(T/yr)
T-4500 Turbine, Unit 2	18.9	65.8	160	0.93	4.08
T-4700 Turbine, Unit 1	22.6	98.9	160	1.0	4.42
TOTAL	41.5	164.7	—	1.93	8.50

[a]As determined by DEQ's emission estimation methods.

NORTHWEST PIPELINE CORPORATION

HAZARDOUS AIR POLLUTANTS SOURCE

ANNUAL (T/yr) EMISSION ESTIMATES[a]

Hazardous Air Pollutant	Turbine T-4500 Unit 2 (T/yr)	Turbine T-4700 Unit 1 (T/yr)	Total (T/yr)
Benzene	1.56E-02	1.83E-02	3.39E-02
Formaldehyde	4.62E-02	5.42E-02	1.00E-01
Toluene	7.02E-02	8.22E-02	1.52E-01
Xylenes	1.56E-01	1.83E-01	3.39E-01
Acetaldehyde	2.24E-03	2.63E-03	4.87E-03

[a] As determined by DEQ's emission estimation methods.